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EXAMINER

DOLLINGER, MICHAEL M

ART UNIT	PAPER NUMBER
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4171

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/562,053	Applicant(s) CLEMENT ET AL.	
	Examiner MICHAEL DOLLINGER	Art Unit 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-47 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 25-47 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/23/2005</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 25 is objected to because of the following informalities: the compound of formula (III) is referred to as “multifunctional” in line 12. Formula (III), however, is a monofunctional compound and is referred to as such in line 18 of claim 25, line 2 of claim 34, line 2 of claim 35, line 4 of claim 37, line 4 of claim 38, line 3 of claim 39, and line 2 of claim 40. Appropriate correction is required.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 25-47 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 24-37 and 39-46

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of copending Application No. 10/498,255. Although the conflicting claims are not identical, they are not patentably distinct from each other because they contain overlapping subject matter. The difference between the copending and instant claims is that the instant claims contain the additional limitation of another additive (i) included in the polymer matrix.

4. Schueler et al. (US 2002/0115771 A1), discussed below, disclose a polyamine-polyamide copolymer additive (paragraphs 0054-0056, 0061) that corresponds to the second additive (i) of the instant claims and the hyperbranched polymer additive of the copending claims, a flame retardant melamine cyanurate (paragraph 0080) that corresponds to the first additive (i) of the instant claims wherein both additive are included in a polyester thermoplastic matrix that corresponds to the polyamide and/or polyester matrix of the instant claims and the matrix M of the copending claims.

5. It would have been obvious to one having ordinary skill in the art to have added the first additive (i) of the instant claims to the composition of the copending claims because Schueler et al. discloses a polyamine-polyamide copolymer (corresponding to the hyperbranched polymer additive of the copending claims and the second additive (ii) of the instant claims) and melamine flame retardant (corresponding to the first additive (i) of the instant claims) added to a polyester matrix (corresponding to the polyamide and/or polyester matrix of the instant claims and the matrix M of the copending claims).

6. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 25-34, 36-40 and 43-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Schueler et al. (US 2002/0115771 A1).

9. Regarding claim 25, applicants claim a thermoplastic composition comprising a mixture of a polyamide and/or polyester matrix corresponding to thermoplastic polyester component I (paragraph 0009) of the molding composition of Schueler et al. Applicants also claim a first additive (i) of the formula $R-Z_u$ wherein R is a hydrocarbon radical, u is an integer greater than or equal to 1 and Z is an acid, amine or alcohol functional group corresponding to monomer b (paragraph 0013-0017) of component III (paragraph 0011-0018) of Schueler et al. wherein R is the esters of acrylic acid and/or methacrylic acid (paragraph 0015), u is clearly a positive number greater than one given the amounts of monomer b present (paragraph 0013), and Z is the free hydroxyl functional groups (paragraph 0015).

Claimed element	Limitation	Corresponding element
(i)		monomer b of component III
R	hydrocarbon radical	esters of acrylic and/or methacrylic acid (0015)
u	integer of 1 or greater	integer greater than 1 (0013)
Z	acid, amine or alcohol functional group	hydroxyl group (0015)

Table I - Anticipatory elements of additive (i) in Schueler et al.

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Applicants also claim a second additive (ii) selected from (A) or (B) wherein (A) is an additive corresponding to the polyamine-polyamide copolymer alternative of component I (paragraph 0054) of Schueler et al.

Claimed element	limitation	Corresponding element
formula (I)		polyamine a) (0055)
R1	Hydrocarbon radical	tris(2-aminoethyl)amine (0061)
X	Amide forming functional group	amine
n	3 to 50	3
formula (II)		Polyamide forming monomers b)
R2	Hydrocarbon radical	ω -aminocarboxylic acids (0056)
X	Amide forming functional group	C_5H_{10} of ω -aminocaproic acid
Y	Amide forming functional group	Amine
formula (III)		Carboxylic acid
R3	Hydrocarbon radical	Monocarboxylic acid regulators (0072)
Y	Amide forming functional group	Benzene of benzoic acid (0072)
		Carboxylic acid

Table II - Anticipatory elements for additive (ii)(A) in Schueler et al.

10. In another embodiment of the molding composition in Schueler et al. that anticipates the thermoplastic composition of the present claim 25, the fire retardant melamine cyanurate (paragraph 0080) is added to the molding composition and the melamine therein corresponds to the first additive (i) wherein the hydrocarbon radical R¹ is a 6 membered aromatic ring, X is an amine functional group, and u is 3.

11. Regarding claim 26, applicants claim the thermoplastic composition comprising from 0.01 to 5% by weight of the first additive (i) relative to the total weight of the composition. Schueler et al. disclose the amount of monomer b as 0 to 79.5% by weight (paragraph 0045) of the copolymer component III which is disclosed in an amount of 0.4 to 20% by weight (paragraphs 0011 and 0019) and henceforth the

monomer b which anticipates additive (i) is present in an amount of 0 to 15.9% by weight of the total molding composition. The disclosed range of amount of monomer b in Schueler et al. anticipates the claimed range because it completely encompasses the claimed range.

12. Regarding claim 27, applicants claim the thermoplastic composition comprising from 0.01 to 20% by weight of the second additive (ii) relative to the total weight of the composition. Schueler et al. disclose the amount of polyamine-polyamide copolymer alternative to component I in an amount of 0.1 to 10% by weight (paragraph 0054). The disclosed range of amount of the polyamine-polyamide copolymer anticipates the claimed range because it lies completely inside the claimed range and henceforth every single embodiment of the disclosed range is a specific anticipatory example of the claimed range.

13. Regarding claim 28, applicants claim the thermoplastic composition wherein the radical R of the first additive (i) is a linear or branched, saturated or unsaturated, aliphatic, cyclic and/or aromatic hydrocarbon radical which may optionally comprise one or more heteroatoms having 2 to 100 carbon atoms. Schueler et al. disclose the fire retardant additive melamine cyanurate (paragraph 0080) wherein the melamine corresponds to the first additive (i) and is aromatic with 6 heteroatoms (nitrogen) and 3 carbon atoms.

14. Regarding claim 29, applicants claim the thermoplastic composition wherein the first additive (i) is selected from a group consisting of specific compounds including melamine. Schueler et al. disclose melamine cyanurate a fire retardant additive

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(paragraph 0080) wherein the melamine in melamine cyanurate corresponds to melamine as the first additive (i).

15. Regarding claim 30, applicants claim the thermoplastic composition wherein Y is an amine functional group when X represents a carboxylic acid functional group, or Y is a carboxylic acid functional group when X represents an amine functional group.

Schueler et al. disclose the polyamine-polyamide copolymer formed from the compounds in Table II above wherein X is an amine and Y is a carboxylic acid.

16. Regarding claim 31, applicants claim the thermoplastic composition wherein the radicals R^1 , R^2 , R^3 and/or R^4 of the second additive (ii) represent, independently of each other, a linear or branched, saturated or unsaturated, aliphatic, cyclic and/or aromatic hydrocarbon radical which may optionally comprise one or more heteroatoms, said radicals R^1 , R^2 , R^3 and/or R^4 from 2 to 100 carbon atoms. Schueler et al. disclose tris(2-aminoethyl)amine (paragraph 0061) corresponding to the compound of formula (I), ω -aminocaproic acid (paragraph 0056) corresponding to the compound of formula (II), and benzoic acid (paragraph 0072) corresponding to the compound of formula (III).

Claimed element	Limitation	Corresponding element	Clarification
R1	Hydrocarbon radical with 2-100 carbon atoms	tris(2-aminoethyl)amine (0061)	6 carbon atoms
R2	Hydrocarbon radical with 2-100 carbon atoms	ω -aminocaproic acid (0056)	5 carbon atoms
R3	Hydrocarbon radical with 2-100 carbon atoms	benzoic acid (0072)	6 carbon atoms
R4	Optional	not present	not present

Table III - Anticipatory elements of R^1 , R^2 , R^3 and/or R^4 in Schueler et al.

17. Regarding claim 32, applicants claim the thermoplastic composition wherein the multifunctional compound of formula (I) is selected from a group of specific compounds including trialkylenetetraamines. Schueler et al. disclose tris(2-aminoethyl)amine

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(paragraph 0061) corresponding to formula (I). Tris(2-aminoethyl)amine can be called 2,2',2''-triaminotriethylamine, henceforth it is trialkyltetraamine.

18. Regarding claim 33, applicants claim the thermoplastic composition wherein the bifunctional compound of formula (II) is selected from a group of specific compounds including aminocaproic acid. Schueler et al. disclose ω -aminocaproic acid (paragraph 0068) corresponding to formula (II).

19. Regarding claim 34, applicants claim the thermoplastic composition wherein the monofunctional compound of formula (III) is selected from a group consisting of an aliphatic monoacid or monoamine compound, an aromatic monoamine or monoacid compound, an organophosphorus monoamine or monocarboxylic acid compound, an organosulfo monoamine or monocarboxylic acid compound, a quaternary ammonium monoamine or monocarboxylic acid compound and/or mixtures thereof. Schueler et al. disclose benzoic acid corresponding to formula (III); benzoic acid is an aromatic monoacid compound.

20. Regarding claims 36, 38 and 40, applicants claim the thermoplastic composition wherein the additive (ii)(B) is given further limitations. These compounds are not disclosed in Schueler et al. However, claims 36, 38 and 40 depend on claim 25 wherein the additive (ii) is selected from (ii)(A) or (ii)(B). Claims 36, 38 and 40 do not recite any limitation that specifically limits the additive (ii) to the form of (ii)(B). Examiner takes the position that any prior art anticipating additive (ii) in the form of (ii)(A) makes any additive (ii) in the form of (ii)(B) optional. Henceforth, any further limitations on the (ii)(B) are also optional. Since Schueler et al. anticipates additive (ii)(A) as recited in

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claim 25 and all the limitations recited in claims 36, 38 and 40 are effectively optional, Schueler et al. also anticipates claims 36, 38 and 40.

21. Regarding claim 37, applicants claim the thermoplastic composition wherein the additive (ii)(A) is a functionalized star-shaped polyamide. The reaction of tris(2-aminoethyl)amine (paragraph 0061) corresponding to the compound of formula (I), ω -caprolactam (paragraph 0068) corresponding to a cyclic form of the compound of formula (II), and benzoic acid (paragraph 0072) corresponding to the compound of formula (III) results in dendrimers (paragraph 0061) with a polyamine core and polyamide (PA-6) dendrites.

22. Regarding claim 39, applicants claim the thermoplastic composition wherein the additive (ii) (A) is obtained by the reaction between a multifunctional compound of formula (I) in proportions of from 1 to 30% by weight, a monofunctional compound of formula (III) in proportions of from 5 to 60% by weight. The molding compositions of Schueler et al. disclose many embodiments of the polyamine-polyamide copolymer that anticipate the claimed ranges of amounts of additives. For example, the polyamine-polyamide copolymer composed of 1 molecule of tris(2-aminoethyl)amine (paragraph 0061), 3 molecules of ω -aminocaproic acid (paragraph 0056), and 1 molecule of benzoic acid (paragraph 0072); weight percentages are shown in Table IV.

Claimed element	Claimed range	Corresponding element	Occurrence in additive (ii)	wt % of additive (ii)
formula I	1-30wt%	tris(2-aminoethyl)amine (0061)	1	22.1wt%
formula II	0-95wt%	ω -aminocaproic acid (0056)	3	59.5wt%
formula III	5-60wt%	benzoic acid (0072)	1	18.5wt%

Table IV – Example of weight percents of polyamine-polyamide copolymer components

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23. Regarding claim 43, applicants claim the thermoplastic composition further comprising reinforcing or bulk fillers. Schueler et al. disclose additives of reinforcing and bulk fillers such as carbon black, titanium dioxide, glass beads and others (paragraph 0080).

24. Regarding claim 44, applicants claim the thermoplastic composition further comprising reinforcing glass fibers. Schueler et al. disclose the molding compositions containing glass fiber additives (paragraph 0080).

25. Regarding claim 45, applicants claim a process for the preparation of the thermoplastic composition comprising mixing the first additive (i) and the second additive (ii) with the polyamide and or polyester matrix. In claim 28 Schueler et al. disclose a method of making the molding composition comprising mixing components I (the polyester matrix and additive (ii)), II and III (the additive (i)).

26. Regarding claim 46, applicants claim a process for shaping of an article by forming the thermoplastic composition comprising extrusion, molding, injection or drawing. Schueler et al. disclose that moldings of the molding composition may be produced by any methods known in the art including extrusion, coextrusion, blow molding or injection molding (paragraph 0084).

27. Regarding claim 47, applicants claim a shaped article of the thermoplastic composition. Schueler et al. disclose molding composition as produced moldings including fuel-pump lines or water-supply lines (paragraph 0081-0082).

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schueler et al. (US 2002/0115771 A1). Applicants claim the thermoplastic composition wherein the content of terminal acid and amine groups of the second additive (ii) ranges from 0 to 300 meq/kg. Schueler et al. disclose polyamine-polyamide copolymer corresponding to additive (ii) having an amino group concentration from 150 to 1500 mmol/kg (paragraph 0072). See MPEP § 2144.05 for obviousness of overlapping ranges.

30. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schueler et al. (US 2002/0115771 A1) in view of Twilley et al. (US 3,558,567). Applicants claim the thermoplastic composition wherein the monofunctional compound of general formula (III) is selected from the group consisting of n-hexadecylamine, n-octadecylamine, n-dodecylamine, benzylamine, aminomethylphosphonic acid, sulfanilic acid, sulfobenzoic acid, betaine, and/or mixtures thereof.

31. Schueler et al., discussed above, do not specifically disclose any of the above mentioned compounds as an element corresponding to formula (III). However, the compounds corresponding to formula (III) taught in Schueler et al. are monocarboxylic

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acid regulators (paragraph 0072) or chain terminators. These compounds terminate the polyamide dendrons that are polymerized outward from the polyamine core molecule.

32. Twilley et al. teach that benzylamine may be used as a suitable chain terminator for polyamides (column 3 lines 35-41).

33. Benzylamine would be a particularly suitable chain terminator for the polyamine-polyamide copolymer because it is similar to benzoic acid which is cited as a suitable monocarboxylic acid chain terminator in Schueler et al. (paragraph 0072).

34. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used benzylamine as the regulator for the polyamine-polyamide copolymer of Schueler et al. resulting in a thermoplastic molding composition according to the present claim 35 because Schueler et al. teach that it is within the skill of the art to combine a polyamine core molecule with polyamide forming monomers to form a polyamine-polyamide copolymer and chain terminate the polyamide dendrons with monocarboxylic acids and Twilley et al. teach that it is within the skill of the art to use benzylamine as a chain terminator. One would have used benzylamine as a chain terminator because it is similar to benzoic acid; this is simple substitution of one functionally equivalent compound for another. Absent any evidence to the contrary, there would have been a reasonable expectation of success in using benzylamine as

the regulator for the polyamine-polyamide copolymer component of the molding compositions of Schueler et al.

35. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schueler et al. (US 2002/0115771 A1) in view of Hsieh et al. (T. -T. Hsieh, C. Tiu, G. P. Simon, Melt rheology of aliphatic hyperbranched polyesters with various molecular weights, Polymer Volume 42, Issue 5, , March 2001, Pages 1931-1939.)

36. Applicants claim the thermoplastic composition comprising a polyamide matrix of a (co)polyamide selected from the group consisting of polyamide 6, polyamide 6,6, polyamide 4, polyamide 11, polyamide 12, polyamides 4-6, 6-10, 6-12, 6-36, 12-12, and copolymers and mixtures thereof.

37. Schueler et al., discussed above, does not specifically disclose the additives (i) and (ii) in combination with a polyamide matrix. However, Schueler et al. teach that the polyamine-polyamide copolymer decreases the melt viscosity of the molding composition and henceforth eases processing without a loss of impact strength (paragraph 0079).

38. Hsieh et al. teach that it is known in the art to use dendritic polymers in polymer blends as flow modifiers to reduce blend viscosity and processing aids (Introduction paragraph 4). Hsieh et al. suggest, henceforth, that a dendritic polymer may be used with any matrix polymer or polymer blend to reduce the melt viscosity and improve

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processability, provided the polymers are miscible. The polyamine-polyamide copolymer dendrimers would be predictably miscible in the polyamides of present claim 42 because the same polyamides comprise embodiments of the dendrons of the polyamine-polyamide copolymer dendrimers.

39. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a polyamide matrix in the molding compositions of Schueler et al. because Schueler et al. teach that it is within the skill of the art to use a dendritic polyamine-polyamide copolymer to reduce the melt viscosity of polyester blend and Hsieh et al. suggest that any combination of dendritic polymer and matrix polymer may reduce the melt viscosity and aide in processing and the polyamine-polyamide copolymer would be very miscible with a polyamide matrix. One would have been motivated to use a polyamide matrix to obtain the expected result of a polyamide moldable composition with decreased melt viscosity and improved processability with no loss of impact strength. Absent any evidence to the contrary, there would have been a reasonable expectation of success in combining using a polyamide matrix in the molding composition of Schueler et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL DOLLINGER whose telephone number is

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(571)270-5464. The examiner can normally be reached on Monday - Thursday
7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 4171

MICHAEL DOLLINGER
Examiner
Art Unit 4171

/MMD/